

What is claimed:

1. An isolated nucleic acid molecule selected from the group consisting of:
  - (a) a nucleic acid molecule comprising the nucleotide sequence set forth in SEQ ID NO:1, or a complement thereof; and
  - (b) a nucleic acid molecule comprising the nucleotide sequence set forth in SEQ ID NO:3, or a complement thereof.

2. An isolated nucleic acid molecule which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2, or a complement thereof.

3. An isolated nucleic acid molecule comprising the nucleotide sequence contained in the plasmid deposited with ATCC® as Accession Number \_\_\_\_\_.

4. An isolated nucleic acid molecule which encodes a naturally-occurring allelic variant of a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2, or a complement thereof.

5. An isolated nucleic acid molecule selected from the group consisting of:
  - (a) a nucleic acid molecule comprising a nucleotide sequence which is at least 93% identical to the nucleotide sequence of SEQ ID NO:1 or 3, or a complement thereof;
  - (b) a nucleic acid molecule comprising at least 828 nucleotides of the nucleotide sequence of SEQ ID NO:1 or 3, or a complement thereof;
  - (c) a nucleic acid molecule which encodes a polypeptide comprising an amino acid sequence at least about 63% identical to the amino acid sequence of SEQ ID NO:2; and
  - (d) a nucleic acid molecule which encodes a fragment of a polypeptide comprising at least 273 contiguous amino acid residues of the amino acid sequence of SEQ ID NO:2.

6. An isolated nucleic acid molecule which hybridizes the nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5 under stringent conditions.

7. An isolated nucleic acid molecule comprising the nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5, and a nucleotide sequence encoding a heterologous polypeptide.

8. A vector comprising the nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5.

9. The vector of claim 8, which is an expression vector.

10. A host cell transfected with the expression vector of claim 9.

11. A method of producing a polypeptide comprising culturing the host cell of claim 10 in an appropriate culture medium to, thereby, produce the polypeptide.

12. An isolated polypeptide selected from the group consisting of:

a) a fragment of a polypeptide comprising at least 273 contiguous amino acids of SEQ ID NO:2;

b) a naturally occurring allelic variant of a polypeptide comprising the amino acid sequence of SEQ ID NO:2, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to the complement of a nucleic acid molecule consisting of SEQ ID NO:1 or 3 under stringent conditions;

c) a polypeptide which is encoded by a nucleic acid molecule comprising a nucleotide sequence which is at least 93 % identical to a nucleic acid comprising the nucleotide sequence of SEQ ID NO:1 or 3; and

d) a polypeptide comprising an amino acid sequence which is at least 63% identical to the amino acid sequence of SEQ ID NO:2.

13. The isolated polypeptide of claim 12 comprising the amino acid sequence of SEQ ID NO:2.

14. The polypeptide of claim 12, further comprising heterologous amino acid sequences.

15. An antibody which selectively binds to a polypeptide of claim 12.

16. A method for detecting the presence of a polypeptide of claim 12 in a sample comprising:

a) contacting the sample with a compound which selectively binds to the polypeptide; and

b) determining whether the compound binds to the polypeptide in the sample to thereby detect the presence of a polypeptide of claim 13 in the sample.

17. The method of claim 16, wherein the compound which binds to the  
5 polypeptide is an antibody.

18. A kit comprising a compound which selectively binds to a polypeptide of claim 12 and instructions for use.

10 19. A method for detecting the presence of a COE-2 nucleic acid molecule in a sample comprising:

a) contacting the sample with a nucleic acid probe or primer which selectively hybridizes to the nucleic acid molecule; and

15 b) determining whether the nucleic acid probe or primer binds to a nucleic acid molecule in the sample to thereby detect the presence of a COE-2 nucleic acid molecule in the sample.

20 20. The method of claim 19, wherein the sample comprises mRNA molecules and is contacted with a nucleic acid probe.

21. A kit comprising a compound which selectively hybridizes to a nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5 and instructions for use.

25 22. A method for identifying a compound which binds to a polypeptide of claim 12 comprising:

a) contacting the polypeptide, or a cell expressing the polypeptide with a test compound; and

b) determining whether the polypeptide binds to the test compound.

30 23. A method for modulating the activity of a polypeptide of claim 12 comprising contacting the polypeptide or a cell expressing the polypeptide with a compound which binds to the polypeptide in a sufficient concentration to modulate the activity of the polypeptide.

35 24. A method for identifying a compound which modulates the activity of a polypeptide of claim 12 comprising:

a) contacting a polypeptide of claim 12 with a test compound; and

b) determining the effect of the test compound on the activity of the polypeptide to thereby identify a compound which modulates the activity of the polypeptide.

5           25. A method of identifying a nucleic acid molecule associated with an inflammatory or pain disorder comprising:

a) contacting a sample comprising nucleic acid molecules with a hybridization probe comprising at least 25 contiguous nucleotides of SEQ ID NO:1; and

10           b) detecting the presence of a nucleic acid molecule in said sample that hybridizes to said probe, thereby identifying a nucleic acid molecule associated with an inflammatory or pain disorder.

26. A method of identifying a nucleic acid associated with an inflammatory or pain disorder comprising:

a) contacting a sample comprising nucleic acid molecules with a first and a second amplification primer, said first primer comprising at least 25 contiguous nucleotides of SEQ ID NO:1 and said second primer comprising at least 25 contiguous nucleotides from the complement of SEQ ID NO:1;

20           b) incubating said sample under conditions that allow nucleic acid amplification; and

c) detecting the presence of a nucleic acid molecule in said sample that is amplified, thereby identifying a nucleic acid molecule associated with an inflammatory or pain disorder.

27. A method of identifying a polypeptide associated with an inflammatory or pain disorder comprising:

a) contacting a sample comprising polypeptides with a binding substance which specifically binds to COE-2; and

30           b) detecting the presence of a polypeptide in said sample that binds to said COE-2 binding substance, thereby identifying a polypeptide associated with an inflammatory or pain disorder.

28. A method of identifying a subject having an inflammatory or pain disorder, or at risk for developing an inflammatory or pain disorder comprising:

35           a) contacting a sample obtained from said subject comprising nucleic acid molecules with a hybridization probe comprising at least 25 contiguous nucleotides of SEQ ID NO:1; and

b) detecting the presence of a nucleic acid molecule in said sample that hybridizes to said probe, thereby identifying a subject having an inflammatory or pain disorder, or at risk for developing an inflammatory or pain disorder.

5           29.     A method of identifying a subject having an inflammatory or pain disorder, or at risk for developing an inflammatory or pain disorder comprising:

          a) contacting a sample obtained from said subject comprising nucleic acid molecules with a first and a second amplification primer, said first primer comprising at least 25 contiguous nucleotides of SEQ ID NO:1 and said second  
10           primer comprising at least 25 contiguous nucleotides from the complement of SEQ ID NO:1;

          b) incubating said sample under conditions that allow nucleic acid amplification; and

          c) detecting the presence of a nucleic acid molecule in said sample that is amplified, thereby identifying a subject having an inflammatory or pain disorder, or  
15           at risk for developing an inflammatory or pain disorder.

          30.     A method of identifying a subject having an inflammatory or pain disorder, or at risk for developing an inflammatory or pain disorder comprising:

          a) contacting a sample obtained from said subject comprising polypeptides with a COE-2 binding substance; and

          b) detecting the presence of a polypeptide in said sample that binds to said COE-2 binding substance, thereby identifying a subject having an inflammatory or  
20           pain disorder, or at risk for developing an inflammatory or pain disorder.

          31.     A method for identifying a compound capable of treating an inflammatory or pain disorder characterized by aberrant COE-2 nucleic acid expression or COE-2 polypeptide activity comprising assaying the ability of the compound to modulate COE-2 nucleic acid expression or COE-2 polypeptide activity, thereby identifying a compound  
25           capable of treating an inflammatory or pain disorder characterized by aberrant COE-2 nucleic acid expression or COE-2 polypeptide activity.

          32.     A method for treating a subject having an inflammatory or pain disorder characterized by aberrant COE-2 polypeptide activity or aberrant COE-2 nucleic acid  
30           expression comprising administering to the subject a COE-2 modulator, thereby treating said subject having an inflammatory or pain disorder.